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EXAMINER
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BARNES, CRYSTAL J

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 10/08/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

PLH

# Office Action Summary

Applicati n No.

09/552,710

Applicant(s)

FILEV ET AL.

Examin r

Crystal J. Barnes

Art Unit

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 May 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, see Appeal Brief (paper no. 14), filed 28 August 2003, with respect to the rejection(s) of claim(s) 1-12 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the finality of the last Office Action (paper no. 10) and the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art references.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 5, 8 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,226,568 B1 to Tong et al. ('568 Tong et al.) in view of

USPN 4,859,865 to Vandenburg, and further in view of USPN 6,262,843 B1 to Marx.

As per claim 1, the '568 Tong et al. reference discloses a portable advisory system for balancing airflows in a paint booth comprising a portable airflow sensor (see columns 4-5 lines 61-5, "low air flow sensors 52") to measure airflows (see columns 4-5 lines 61-5, "air flow") in the paint booth (see column 3 lines 20-21, "paint spray booth") and a portable computer (see columns 4-5 lines 61-5, "remote terminal unit") connected to said sensor (see columns 4-5 lines 61-5, "low air flow sensors 52") for collecting data from said airflow sensor (see columns 4-5 lines 61-5, "low air flow sensors 52") and guiding an operator through a process of adjusting multiple fan speeds (see column 5 lines 7-23, "setting the speed of exhaust fan 33 and supply fan 20") and duct dampers (see column 5 lines 7-23, "cross flow dampers 50") to achieve desired airflows (see column 5 lines 7-23, "desired air flow").

The '568 Tong et al. reference does not expressly disclose a portable airflow sensor and a portable computer.

The Vandenburg reference discloses  
(see column 3 lines 54-56, "A suitable air flow sensor ... Kurz portable Air Velocity Meter ...")

The Vandenburg reference does not expressly disclose a portable computer.

The Marx reference discloses

(see column 2 lines 11-16, "... a fixed terminal or portable terminal ...")

(see column 5 lines 29-32, "... terminal 20 ... portable computer ...")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the low air flow sensors and the remote terminal taught by the '568 Tong et al. reference with the portable air flow sensor taught by the Vandenburg reference and the portable terminal taught by the Marx reference, respectively.

One of ordinary skill in the art would have been motivated to make the sensor and/or the computer portable so that a user could move one or both with ease to other systems requiring airflow balancing.

As per claim 4, the rejection of claim 1 is incorporated and further claim 4 contains limitations recited in claim 1; therefore, claim 4 is rejected under the same rationale as claim 1.

As per claim 5, the rejection of claim 1 is incorporated and further claim 5 contains limitations recited in claim 1; therefore, claim 5 is rejected under the same rationale as claim 1.

As per claim 8, the '568 Tong et al. reference discloses a method of balancing airflows in a paint booth comprising the steps of providing a portable airflow sensor (see columns 4-5 lines 61-5, "low air flow sensors 52") to measure airflows (see columns 4-5 lines 61-5, "air flow") in the paint booth (see column 3 lines 20-21, "paint spray booth"), providing a portable computer (see columns 4-5 lines 61-5, "remote terminal unit") and connecting the portable computer (see columns 4-5 lines 61-5, "remote terminal unit") to the air flow sensor (see columns 4-5 lines 61-5, "low air flow sensors 52"), measuring the velocity (see column 5 lines 7-22, "cross-flow velocities ... air supply velocity") of the airflows (see columns 4-5 lines 61-5, "air flow") in the paint booth (see column 3 lines 20-21, "paint spray booth") with the airflow sensor and storing the measured airflows in a database, and updating a sensitivity model (J) (see column 8 lines 6-9, "Jacobian Sensitivity Matrix") of the paint booth ("paint spray booth") with the measured velocity of the airflows (see column 8 lines 6-9, "cross-flow velocities") to balance the airflows ("air flow") in the paint booth ("paint spray booth").

As per claim 10, the '568 Tong et al. reference discloses said step of updating includes computing a mean squared error (see column 7 lines 48-55, "minimize RMS error") with the sensitivity model (J) (see column 8 lines 6-20, "Jacobean Sensitivity Matrix").

As per claim 11, the '568 Tong et al. reference discloses the step of updating new inputs and current sensitivity model in a first database (see column 8 lines 10-20, "updating the Jacobean ... adjustments to the independent variables").

As per claim 12, the '568 Tong et al. reference discloses the step of calculating a rate of learning (see figures 4, 5 and columns 5-6 lines 47-35, "parabolic curve 60 ... parabolic curve 61 ... base line fan curve 62 ... base line exhaust fan curve 62 ... target fan curve 63").

4. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,226,568 B1 to Tong et al. ('568 Tong et al.) in view of USPN 4,859,865 to Vandenburg, and further in view of USPN 6,262,843 B1 to Marx as applied to claims 1, 4, 5, 8 and 10-12 above and further in view of USPN 5,34,988 to Rein et al.

As per claim 6, the combined teachings of '568 Tong et al., Vandenburg, and Marx do not expressly disclose said computer includes a flexible setup dialog.

As per claim 7, the combined teachings of '568 Tong et al., Vandenburg, and Marx do not expressly disclose said computer includes an algorithm communicating with a plurality of databases and a flexible setup dialog.

The Rein et al. discloses

(see column 24 lines 26-30, "The controllers 68 receives their initial and subsequent programming and commands from either a building automation system 76, a coordinating controller 102 or a setup tool 320 by means of the first communication medium TX1.")

(see figures 19, 20 and column 24 lines 31-36, "The setup tool 320 uses a non-physical link to provide programming, information or commands to any particular controller 68 by means of the central receiver 66.")

(see column 24 lines 41-53, "The setup tool 320 can also, or alternatively, be provided with a wired connector such as electrical plug 324 capable of operatively interfacing with a mating connection 316 on a zone sensor 58 of a personal comfort sensor 110.")



(see column 24 lines 54-66, "The setup tool 320 typically includes a housing 328 containing a microprocessor controller 330, and output device 332, a wired connector 324 or an infrared transmitter 326, a keyboard 336, a display 338 and a generic sensor input 104H.")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the remote terminal unit taught by the '568 Tong et al. reference to incorporate the setup tool taught by the Rein et al. reference.

One of ordinary skill in the art would have been motivated to modify the method of balancing paint booth airflows to provide a setup tool for programming components of a wireless communications system (see Rein et al. column 3 lines 41-57).

5. Claims 1-5, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,146,264 to Tong et al. ('264 Tong et al.) in view of USPN 4,859,865 to Vandenburg, and further in view of USPN 6,262,843 B1 to Marx.

As per claim 1, the '264 Tong et al. reference discloses a portable advisory system for balancing airflows in a paint booth comprising a portable airflow sensor

(see column 5 lines 8-15, "flow velocity sensors 60") to measure airflows (see column 5 lines 16-20, "air velocity") in the paint booth (see figure 1 and column 2 lines 26-30, "paint booth") and a portable computer (see column 6 lines 45-50, "a suitable computer") connected to said sensor ("flow velocity sensors 60") for collecting data from said airflow sensor ("flow velocity sensors 60") and guiding an operator through a process of adjusting multiple fan speeds (see column 6 lines 11-14, "air supply fan motors") and duct dampers (see column 6 lines 11-14, "damper motors") to achieve desired airflows (see column 6 lines 11-14, "desired down flow and cross flow velocity").

The '264 Tong et al. reference does not expressly disclose a portable airflow sensor and a portable computer.

The Vandenburg reference discloses

(see column 3 lines 54-56, "A suitable air flow sensor ... Kurz portable Air Velocity Meter ...")

The Vandenburg reference does not expressly disclose a portable computer.

The Marx reference discloses

(see column 2 lines 11-16, "... a fixed terminal or portable terminal ...")

(see column 5 lines 29-32, "... terminal 20 ... portable computer ...")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the flow velocity sensors and the suitable computer taught by the '264 Tong et al. reference with the portable air flow sensor taught by the Vandenburg reference and the portable terminal taught by the Marx reference, respectively.

One of ordinary skill in the art would have been motivated to make the sensor and/or the computer portable so that a user could move one or both with ease to other systems requiring airflow balancing.

As per claim 2, the '264 Tong et al. reference discloses said computer (see figure 3 and column 7 lines 3-20, "computer 88") includes a database (see column 7 lines 3-20, "memory map 79") of optimal control settings (see column 7 lines 3-20, "desired operating mode") for storing information of last optimal commands and last optimal sensitivity model (see column 7 lines 3-20, "co-processor 76 ... algorithm").

As per claim 3, the '264 Tong et al. reference discloses said computer (see figure 3 and column 7 lines 3-20, "computer 88") includes a database (see column 7

lines 3-20, "memory map 79") for storing information of air velocities and VFD/damper commands (see column 7 lines 3-20, "co-processor 76 ... algorithm").

As per claim 4, the rejection of claim 1 is incorporated and further claim 4 contains limitations recited in claim 1; therefore, claim 4 is rejected under the same rationale as claim 1.

As per claim 5, the rejection of claim 1 is incorporated and further claim 5 contains limitations recited in claim 1; therefore, claim 5 is rejected under the same rationale as claim 1.

As per claim 8, the '264 Tong et al. reference discloses a method of balancing airflows in a paint booth comprising the steps of providing a portable airflow sensor (see column 5 lines 8-15, "flow velocity sensors 60") to measure airflows (see column 5 lines 16-20, "air velocity") in the paint booth (see figure 1 and column 2 lines 26-30, "paint booth"), providing a portable computer (see column 6 lines 45-50, "a suitable computer") and connecting the portable computer ("a suitable computer") to the air flow sensor ("flow velocity sensors 60"), measuring the velocity of the airflows ("air velocity") in the paint booth ("paint booth") with the airflow sensor ("flow velocity sensors 60") and storing the measured airflows ("air velocity") in a database (see column 6 lines 28-31, "collection"), and updating a

sensitivity model (J) (see column 6 lines 28-31, "Jacobean") of the paint booth ("paint booth") with the measured velocity of the airflows (see column 6 lines 23-28, "crossflow signals and downflow signals") to balance the airflows ("air velocity") in the paint booth ("paint booth").

As per claim 9, the '264 Tong et al. reference discloses said computer (see column 6 lines 16-20, "computer") includes a database (see column 6 lines 28-31, "collection") for storing information of air velocities and VFD/damper commands (see column 6 lines 16-20, "algorithm ... effect of fan speed changes and damper motor position changes ...").

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,146,264 to Tong et al. ('264 Tong et al.) in view of USPN 4,859,865 to Vandenburg, and further in view of USPN 6,262,843 B1 to Marx as applied to claims 1-5, 8 and 9 above and further in view of USPN 5,34,988 to Rein et al.

As per claim 6, the combined teachings of '264 Tong et al., Vandenburg, and Marx do not expressly disclose said computer includes a flexible setup dialog.

As per claim 7, the combined teachings of '264 Tong et al., Vandenburg, and Marx do not expressly disclose said computer includes an algorithm communicating with a plurality of databases and a flexible setup dialog.

The Rein et al. discloses

(see column 24 lines 26-30, "The controllers 68 receives their initial and subsequent programming and commands from either a building automation system 76, a coordinating controller 102 or a setup tool 320 by means of the first communication medium TX1.")

(see figures 19, 20 and column 24 lines 31-36, "The setup tool 320 uses a non-physical link to provide programming, information or commands to any particular controller 68 by means of the central receiver 66.")

(see column 24 lines 41-53, "The setup tool 320 can also, or alternatively, be provided with a wired connector such as electrical plug 324 capable of operatively interfacing with a mating connection 316 on a zone sensor 58 of a personal comfort sensor 110.")

(see column 24 lines 54-66, "The setup tool 320 typically includes a housing 328 containing a microprocessor controller 330, and output device 332, a wired

connector 324 or an infrared transmitter 326, a keyboard 336, a display 338 and a generic sensor input 104H.")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the computer taught by the '264 Tong et al. reference to incorporate the setup tool taught by the Rein et al. reference.

One of ordinary skill in the art would have been motivated to modify the method of balancing paint booth airflows to provide a setup tool for programming components of a wireless communications system (see Rein et al. column 3 lines 41-57).

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,643,077 to Ayer.

As per claim 1 wherein a portable advisory system for balancing airflows in a paint booth comprising a portable airflow sensor (see figure 1 and column 4 lines 61-64, "monitor 19") to measure airflows (see columns 4-5 lines 64-8, "flow rate") in the paint booth (see figure 1 and column 4 lines 47-50, "paint spray booth enclosure 10") and a portable computer (see columns 4-5 lines 64-8, "central controller 22") connected to said sensor ("monitor 19") for collecting data from

said airflow sensor ("monitor 19") and guiding an operator through a process of adjusting multiple fan speeds (see column 5 lines 2-4, "exhaust fan system 25") and duct dampers (see column 5 lines 4-8, "air intake damper 23, recirculation damper 24") to achieve desired airflows (see column 5 lines 4-8, "constant flow rate").

The Ayer reference does not expressly disclose a portable airflow sensor and a portable computer.

The Vandenburg reference discloses  
(see column 3 lines 54-56, "A suitable air flow sensor ... Kurz portable Air Velocity Meter ...")

The Vandenburg reference does not expressly disclose a portable computer.

The Marx reference discloses

(see column 2 lines 11-16, "... a fixed terminal or portable terminal ...")

(see column 5 lines 29-32, "... terminal 20 ... portable computer ...")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the monitor and the central controller taught by the Ayer reference with the portable air flow sensor taught by the



Vandenburgh reference and the portable terminal taught by the Marx reference, respectively.

One of ordinary skill in the art would have been motivated to make the sensor and/or the computer portable so that a user could move one or both with ease to other systems requiring airflow balancing.

### *Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patent is cited to further show the state of the art with respect to airflow sensing equipment in general:

USPN 4,481,829 to Shortridge

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Crystal J. Barnes whose telephone number is 703.306.5448. The examiner can normally be reached on Monday-Friday alternate Mondays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anil Khatri can be reached on 703.305.0282. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.305.3900.

cjb  
October 6, 2003



ANIL KHATRI  
SUPERVISORY PATENT EXAMINER